

AMENDMENTS TO THE CLAIMS

Claims 1-19 (Canceled)

20. (Currently Amended) An optical transmission system comprising:
a transmitter outputting signal light in which a plurality of signal channels with an optical frequency spacing of 400 GHz or more but 12.5 THz or less are multiplexed;
an optical fiber transmission line transmitting the signal light;
an optical fiber for Raman amplification constituting at least part of said optical fiber transmission line; and

Stimulated-Raman-Scattering means which Raman-amplifies the signal light in said optical fiber for Raman amplification, by supplying Raman amplification pumping light,

wherein the Raman amplification pumping light includes a plurality of pumping channels, and ~~reaches~~ the plurality of pumping channels are assigned to the same part of said optical transmission line ~~via said optical fiber for Raman amplification.~~

21. (Previously Presented) A system according to claim 20, wherein said transmitter includes a directly-modulation laser, and

wherein said optical fiber for Raman amplification has a negative chromatic dispersion at each signal channel.

22. (Currently Amended) A system according to claim 20, wherein a nonlinear refractive index of said optical fiber for Raman amplification ~~has a nonlinear refractive index of~~ does not become lower than 3.5×10^{-20} [m²/W] ~~or more~~.

23. (Currently Amended) An optical transmission system comprising:
a transmitter outputting signal light in which a plurality of signal channels with an optical frequency spacing of 400 GHz or more but 12.5 THz or less are multiplexed;
an optical fiber transmission line transmitting the signal light; and

Stimulated-Raman-Scattering means which includes at least part of said optical fiber transmission line as an optical fiber for Raman amplification constituting at least part of said optical fiber transmission line, which includes a pumping light source which supplies Raman amplification pumping light containing two or more pumping channels multiplexed to ~~part of~~ said optical fiber transmission line while the multiplexed pumping channels are assigned to the same part of said optical fiber transmission line, and which Raman-amplifies the signal light by supplying the Raman amplification pumping light,

wherein an optical frequency of each pumping channel contained in the pumping light is so set as to locate a peak of Raman gain at an optical frequency different from an optical frequency of each signal channel contained in the signal light, and

wherein an optical frequency spacing between the adjacent pumping channels in the Raman amplification pumping light is 4,680 GHz or more.

24. (Previously Presented) A system according to claim 23, wherein said transmitter includes a directly-modulation laser, and

wherein said optical fiber for Raman amplification has a negative chromatic dispersion at each signal channel.

25. (Currently Amended) A system according to claim 23, wherein, of said optical fiber transmission line, at least a transmission line section functioning as said optical fiber for Raman amplification has a negative chromatic dispersion ~~in a wavelength band where the plurality of signal channels of the signal light are present~~ at each signal channel.

26. (Currently Amended) A system according to claim 23, wherein a nonlinear refractive index of said optical fiber for Raman amplification ~~has a nonlinear refractive index of~~ does not become lower than $3.5 \times 10^{-20} \text{ [m}^2/\text{W]}$ ~~or more~~.

27. (Currently Amended) A system according to claim 23, wherein ~~when an optical frequency band of the signal light is 12.48 THz or less, and~~ let m be the number of pumping channels of the pumping light, and n be the number of signal channels of the signal light, the number of pumping channels and the number of signal channels satisfy the following relation:

$$m \leq n/2.$$

28. (Currently Amended) A system according to claim 23, wherein ~~when an optical frequency band of the signal light is 12.48 THz or less, and~~ let m be the number of pumping channels of the pumping light, and n be the number of signal channels of the signal light, the number of pumping channels and the number of signal channels satisfy the following relation:

$$m \leq (n + 4)/2.$$

29. (Previously Presented) A system according to claim 23, wherein said optical fiber for Raman amplification has the value $MPI_{\text{crosstalk}}$ of 30 dB or less.

30. (Currently Amended) An optical transmission system comprising:
a transmitter outputting signal light in which a plurality of signal channels with an optical frequency spacing of 400 GHz or more but 12.5 THz or less are multiplexed;
an optical fiber transmission line transmitting the signal light;
an optical fiber for Raman amplification constituting at least part of said optical fiber transmission line; and

Stimulated-Raman-Scattering means which Raman-amplifies the signal light in said optical fiber amplification, by supplying Raman amplification pumping light,

wherein the Raman amplification pumping light includes a plurality of pumping channels, and ~~reaches~~ the plurality of pumping channels are assigned to the same part of said optical transmission line ~~via said optical fiber for Raman amplification~~, and

wherein at least one of the pumping channels in the Raman amplification pumping light contains a plurality of longitudinal modes.

31. (Currently Amended) A system according to claim 30, wherein said transmitter includes a directly-modulation laser, and

wherein said optical fiber for Raman amplification has a negative chromatic dispersion at each signal channel.